



Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

August 4, 2008

L-2008-171  
10 CFR 50.73

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Re: St. Lucie Unit 2  
Docket No. 50-389  
Reportable Event: 2008-002  
Date of Event: June 4, 2008  
Unit 2 Manually Tripped As Result of Maintenance Activities

The attached Licensee Event Report 2008-002 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

*Christopher R. Costanzo for SVP*

Gordon L. Johnston  
Site Vice President  
St. Lucie Plant

GLJ/dlc

Attachment

## LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME St. Lucie Unit 2	2. DOCKET NUMBER 05000389	3. PAGE 1 OF 3
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4. TITLE  
Unit 2 Manually Tripped As A Result of Maintenance

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	04	2008	2008	- 002 -	00	08	04	2008	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 100%	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A							

12. LICENSEE CONTACT FOR THIS LER		TELEPHONE NUMBER (Include Area Code)
NAME Donald L. Cecchetti - Licensing Engineer	772-467-7155	

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	SJ	P	N/A	YES					

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 4, 2008, St. Lucie Unit 2 was in Mode 1 at 100% power while Plant instrument and control(I&C)personnel were performing maintenance on the 5B Feedwater (FW) Heater High Level Limit Switch LS-11-26B, when two taped energized leads were being routed through a conduit elbow came in contact with the conduit and grounded. The ground resulted in the 2B Heater Drain Pump being tripped on low level and the 2A Main Feedwater Pump tripping on low suction pressure 50 seconds after the heater drain pump tripped. The reactor was manually tripped in anticipation of a low steam generator level auto-trip. All safe shutdown equipment operated as designed with no impact on the health and safety of the public.

The root cause of the event was determined to be a failure to implement adequate process controls to minimize risk during level switch replacement, and the drifting of the pressure switch (PS-12-14A) set point resulting in a premature actuation of the switch during a feed water transient. This ultimately resulted in a manual reactor trip.

Corrective actions included, development of specific procedural direction for controlling energized leads during work evolutions using the risk management process, design modifications to address vulnerability when performing maintenance on level switches, and evaluation of industry best practices for training and handling of energized leads.

**LICENSEE EVENT REPORT (LER)**  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
St. Lucie Unit 2	05000389	2008	002	00	Page 2 of 3

**NARRATIVE****Description of the Event**

On June 4, 2008, with St. Lucie Unit 2 in Mode 1 at 100% power, Plant instrument and control personnel were performing maintenance on the 5B Feedwater (FW) Heater High Level Limit Switch LS-11-26B [EII:SJ] when two taped leads being routed into the housing became lodged in the elbow of the conduit. During attempts to retract the leads the tape became dislodged and the wires came in contact with the conduit resulting in a 20 amp fuse failing on the 120V Vital AC 2B panel circuit 1. This de-energized the solenoids associated with the alternate and normal drain valves to the 5B, 4B and 3B feedwater heaters [EII:SJ]. The normal valves failed closed and the alternates failed open. The 2B Heater Drain Pump [EII:SJ] then tripped on low level as indicated by alarm F-44, 2B Heater Drain Pump Flow Low/Heater Level Lo-Lo. As the feedwater (FW) Heater 4B alternate opened the level decreased to the trip set point. Preparations for a rapid downpower were initiated. The 2A main feedwater pump tripped on low suction pressure 50 seconds after the heater drain pump tripped. The reactor was manually tripped in anticipation of a low steam generator level auto-trip. All safe shutdown equipment operated as expected.

**Cause of the Event**

The root cause analysis of the event determined the cause to be failure to implement adequate process controls to minimize risk during level switch replacement and drifting of the pressure switch set point causing a premature actuation of the switch during a feed water transient. This ultimately resulted in a manual reactor trip. Several contributing causes associate with this event included; lack of detailed planning and the absence of a formal risk review, lack of single isolation of energized circuits in plant configurations, and inadequate taping of the leads for the level switch prior to job execution.

**Analysis of the Event**

This event is reportable under 10 CFR 50.73(a)(2)(iv)(A), as any event or condition that resulted in a manual or automatic reactor trip.

**Analysis of Safety Significance**

The condensate, feedwater and heater drain system draws water from the condenser hotwells and feedwater heaters and pumps it to the steam generators feed nozzles. The system is a composite of several subsystems that work in conjunction with one another to supply pre-heated and deaerated high pressure feedwater to the steam generators for steam production and are not safety related except for the condensate storage tank (CST) which is the source of water for the auxiliary feedwater system. Failure of the 2B Heater Drain pump would have ultimately led to a low steam generator level auto-trip of the Unit without operator intervention. Actions taken by the operators to manually trip the Unit precluded that action. The condensate and feedwater system have no credited safety function and the unit operator were able to achieve a safe shutdown without impacting the health and safety of the public.

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St. Lucie Unit 2	05000389	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	Page 3 of 3
		2008	- 002	- 00	

**NARRATIVE**

**Corrective Actions**

The corrective actions and supporting actions are entered into the site corrective action program. Any changes to the proposed actions will be managed under the commitment management change program.

Immediate Corrective Actions:

- Performed stand-down and Human Performance walkdown with crews.
- Implemented the requirement during FIN work activities to have a risk review performed prior to implementation.

Corrective Actions:

1. Develop specific procedural direction for controlling energized leads during all work evolutions and provide direction for the use of the risk management process.
2. Design and implement modifications to address vulnerability when performing maintenance on the level switches.
3. Evaluate and incorporate industry best practices for handling all leads, include training plan.
4. Revise the preventive maintenance strategy which mitigates setpoint drift or implement design change to replace the main feedwater pump suction pressure switches.

**Similar Events**

A search of the corrective action database for St. Lucie was performed to identify events related to manipulation of energized wires. One condition report (CR 96-2772) with similar concerns was found in which during maintenance on a level switch, leads were shorted which de-energized a portion of feedwater heater level control system, resulting in lifting feedwater heater safety reliefs and resulting in a significant plant transient.

**Failed Components**

20 amp fuse on the 120V Vital AC 2B panel circuit

**Degraded Components**

Feedwater (FW) Heater High Level Limit Switch LS-11-26B